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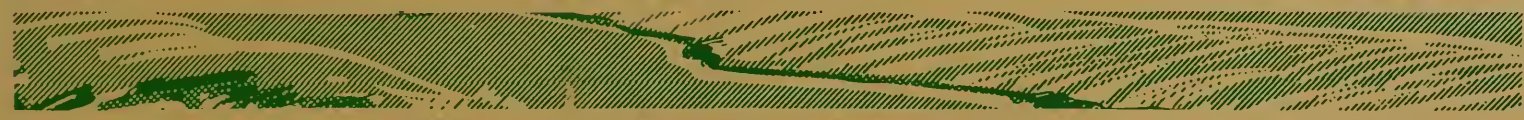
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RANGE IMPROVEMENT



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NOTES

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(AGRI - OGDEN)

STATEMENT OF PURPOSE

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This publication is printed primarily to inform professional range administrators of important range improvement and management developments and findings. These "Notes" may include extracts of published papers, unpublished preliminary reports of research work, unpublished reports on administrative studies, and personal observations or suggestions of other range administrators. No claim is made as to the accuracy or completeness of studies or conclusions drawn.

All who read these RANGE IMPROVEMENT NOTES are encouraged to submit material for publication, or suggestions for improving its usefulness. Full credit will be given for any material used.

EFFECTS OF SUMMER UTILIZATION OF BITTERBRUSH IN NORTH-CENTRAL WASHINGTON *

By

Charles F. Martinsen
(M.S. Thesis, University of Idaho, 1960)

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A study to determine the effects of summer grazing on bitterbrush, the key winter forage plant for mule deer in north-central Washington, was initiated in 1953 and continued through 1958. Preliminary observations had indicated that summer browsing of bitterbrush by cattle, especially from late July through September, was more detrimental to plant condition and forage production than winter use.

Five areas were selected for study; two free of grazing, two with varying degrees of deer use, and one with heavy cattle and deer use. The main experimental plot was free from grazing and located near the town of Okanogan.

A sample of plants was randomly selected on each area and subjected to removal of one-half the current twig growth at different times during the summer. Three series of plants on the Okanogan plot were subjected to clipping; one series was clipped in June, the second in August, and the third in October. The remaining study plots were clipped in October. The green weight and oven-dry weight of the forage removed was recorded each year for each clipping.

Additional data was obtained on plant age, hedging form, growth, seed production, deadwood in the crown, average height, average crown diameter, twigs per plant, and annual twig length and utilization.

Forage production varied from year to year due largely to the fluctuation in annual precipitation and because the plants on the more arid sites were dependent upon current moisture during the growing season for growth.

An analysis of variance showed a significant difference between the series clipped in June and the latter two series. This indicated that

* This abstract appeared in the September 1961, issue of the Idaho Section of the American Society of Range Management NEWS LETTER.

utilization of bitterbrush prior to August was detrimental to plant condition and forage production, but utilization after August did not adversely affect the plants.

There was a significant difference between the ungrazed, deer used, and cattle and deer used areas. The cattle and deer used area produced the least amount of forage, with the ungrazed area second, and the deer utilized area producing the most.

The age classes of plants showed a definite change from young and mature plants to decadent and dead plants as the study continued. The hedging form changed from no hedging to moderate hedging in all series. The largest change in age and form occurred in the series of plants clipped in June.

On the Okanogan plot, the percent of deadwood in the crown increased in all series. The largest increase, 17.4 percent, occurred in the June series.

On the deer and cattle utilized plots, the percent of deadwood in the crown reflected the changes that took place with varying degrees of use. The cattle and deer used plot showed 35.0 percent deadwood per plant while the protected and deer utilized plot showed less than 10 percent.

The height and crown measurements showed a decline in all series, with the June series decreasing the most.

Forage production based on pounds per acre showed that the heavily utilized shrubs produced considerably less forage than moderately used plants because of less twig growth and fewer plants per acre. Range in good condition showed 230 to 300 bitterbrush plants per acre while the poor ranges showed only 145 plants per acre.

Management plans of the range areas where both cattle and deer create problems should be more carefully studied so as to maintain maximum numbers of each and a good forage supply. Such plans, put into force, would result in better range conditions, animal production, and benefits for all concerned.

A mechanical analysis of texture was conducted for representative sand and native soil. The sand samples were subjected to a sieve test for grain size analysis. Organic matter content of sand from several sites of different ages, plus native soil was measured by the potassium dichromate method.

Total unavailable, and available moisture below a depth of one foot were compared in sand and native soil during the dry part of the summer. Results showed there was no available water present in any of the native soil samples, even though total moisture was higher than in sand. Total moisture was low in sand, but the level of unavailability was even lower, and some water was available to plants in every one of the samples tested. This probably explains the greater vegetational growth, and the presence of chokecherry and dense bitterbrush, on stabilized sand as compared to adjacent native soil.

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PICK IT UP AND PUSH IT ON

Never hesitate. If you pick up a letter, answer it. If you pick up a report, read it. Make a note on it what action is to be taken.

If there is no action, mark it for "files."

Never pick up anything TWICE . . . do not dwadle over it. Make an action decision; it may be a bum decision, but it's a decision.

If it's a highly important matter, the first action may be to send out for more information . . . so you can make a good decision.

Don't let a document hang around. Don't put it somewhere in a stack that you "hope to get to" when you get time.

If you've got much material you "think" you can't eliminate, tell your secretary to put it in a box in some far corner. Leave it there for 30 days. If you have no call for it, you didn't really need it. Get rid of it.

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The largest room in the world is the
room for improvement.

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HANSEN FURROW SEEDER (BROWSE SEEDER)

By A. Perry Plummer *

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Trials through the past five years show that the Hansen furrower equipped with seed cans will be a useful implement for seeding browse as well as seed of grasses and legumes on a variety of sites. It has proved especially useful for breaking up gully patterns on sloping lands. With the seed can units, planting can be accomplished simultaneously with the ground treatment.

The basic implement was developed by the Walter Hansen and Sons Machine Company of Ephraim, Utah, about nine years ago, but at that time seeding units were not a part of the implement. The improved machine with seeding units is made by the same company and is now selling for about \$500.00 per unit. The machine as now constructed weighs approximately 350 pounds and will be built on order for those desirous of getting one. Two machines, made two years ago for the Utah State Fish and Game Department, have held up well. Together they have treated about 700 acres of rocky land with only minor repairs being necessary.

The furrower is basically comprised of two 6-inch moldboard plows spaced 28 inches apart. The plows are mounted on heavy reinforced moldboard plow beams. Seed cans of about 10-quart capacity are mounted so seed from them is distributed by a tube going directly to the bottom of the furrow. The mechanism for delivering the seeds to the tube is a circular notched plate rotating in the bottom of the seed can. The size of the notches in the plate controls the rate of seeding. By changing plates seeding rates can be appropriately modified from low to high. The company is considering making a model with fluted feed now used in the rangeland drill and commonly used in many grain drills. This may add to the simplicity of the machine, making it more adaptable for seeding a greater variety of seeds.

Trials show that the machine does a good job distributing the seeds of several species as well as placing them in the bottom of about a

* Range Conservationist (Research), Intermountain Forest and Range Experiment Station, Ephraim, Utah.

2-inch deep furrow. Seeds are covered by sloughing to a depth of one-half to one inch. Press wheels are attachable if desired. The machine operates from the customary 3-point hitch from jeeps or tractors, but it can be quickly modified to be pulled directly by horses or a tractor. Horses can be used on steeper slopes where a tractor cannot be used. The two seeding units make it possible to plant browse and grass, or any two different kinds or groups of seed in alternate rows. This is often desirable. Seeds of browse tested by this machine included bitterbrush, cliffrose, fourwing saltbush, mountain mahogany, tatarian honeysuckle, and golden currant. Also, tests were made with seeds of several grasses and alfalfa. All these were satisfactorily planted. A rate of planting of one-half to one acre per hour has been attained, depending on the terrain of the areas. On level areas or moderate slopes with but few rocks it is possible to exceed the one acre per hour.

This small equipment appears to have real promise for effective seeding of tarweed areas, and especially those where small size of areas or difficulties in access make the use of large equipment impractical. In some instances a two-wheel undercutter can be used to eliminate tarweed or other weedy competition preliminary to seeding with the Hansen furrower.

The Walter Hansen and Sons Machine Company will make these machines up on order. Mr. Walter Hansen, the manager, states he can have these furrowers ready for delivery within 90 days after receiving the order. Communications should be directed to Mr. Walter Hansen, Manager, Ephraim, Utah.

While the development of this machine by the company was encouraged by the Intermountain Forest and Range Experiment Station and the Utah State Fish and Game Department and incorporates ideas gained from tests by these agencies, it is a development of the company. Mr. Hansen states he will be most happy for any suggestions that will result in the machine's improvement. It is a piece of equipment a ranger district could use to advantage to do small revegetation jobs, especially where it is not possible or feasible to take in large equipment.

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Hansen furrow-seeder on three-point hitch mounted behind a jeep.



Hansen furrow-seeder operating on gentle slopes showing furrows made by plows ahead of seed delivering from top-mounted seed cans.

THE SHEEP VALLEY GUZZLER INSTALLATION

(Abstract of report by Grant G. Williams
and Q. David Hansen) *

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There have been several feature articles published on the development of guzzlers to provide water on poorly watered rangelands.

In cooperation with Dr. C. W. Lauritzen, Agricultural Research Service, and the Carlisle Tire and Rubber Company, it was agreed that in 1960 an experimental installation would be made on the Sheep Valley allotment on the Loa Ranger District of the Fishlake National Forest. Summer showers beginning about the middle of July are common in the selected area.

The guzzler location is in a good range area used only lightly because of the lack of water. Installation costs were as follows:

1. Cost of apron and storage bag (donated)
estimated value \$ 567.00

2. Installation costs:

Clearing and leveling the ground for the apron	103.00
Laying of apron and installing storage bag	265.00
Protective fencing	139.25
Estimated cost of watering tank (tank on hand)	75.00
Tank installation and hauling of pipe and fixtures	85.00
Total Cost	\$ 1,234.25

The following pictures illustrate the project:

* Range Management staff assistant and District Forest Ranger,
Fishlake National Forest, Richfield, Utah



Ranger Hansen is checking abundance of grass that is not grazed because it is located too far from water for livestock to reach the area.



"V" shaped at the bottom the 120x60 foot one-piece rubber apron provides a natural funnel through which water is concentrated and fed to the synthetic rubber storage tank. Checking the work is, rear left, Harold Blackburn; front left to right, Dr. Lauritzen, A.R.S., Ranger Hansen, Loa District; Heber Rees, president, Tidwell C&H Association, and Grant G. Williams, RW&W officer. (Prior to laying the apron the surface irregularities were smoothed and vegetation removed. A soil sterilant may be desirable. - Editor)



Prefabricated metal catchment box is coated with rust preventative prior to being laid in the ground.



Apron secured around the collection box at the bottom of the apron. Screen placed on the box is to prevent leaves and branches from going into storage bag. Underneath grill $1/4$ " mesh prevents smaller material from going through. Grill is removable for easy cleaning.



Synthetic rubber storage bag. Eight-inch synthetic tubing is shown coming from guzzler apron and collection box to the synthetic storage bag. Light object inside fenced area is the empty 1600-gallon bag.



General view from collection apron of the guzzler to the water tank at the top of the picture. (Water delivery is controlled at the tank with a float valve.)

SAFETY MESSAGE

IT'S WHEN YOU STOP

A 3,200-pound car will develop enough kinetic energy at 20 miles per hour to lift a thousand-pound elevator 3 floors. The same car striking a fixed object at 60 miles per hour strikes with a force equal to that of a vehicle driven off a 12-story building.

The next time you are driving 60 miles per hour, remember it takes 15.5 average car lengths to bring your vehicle to a complete stop.

- - - Safety Standards
U. S. Dept. of Labor

